

NEWSLINE

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LAB ANNOUNCEMENTS

Computer code makes quantum leap for stewardship

The National Nuclear Security Administration (NNSA) and IBM teamed up Thursday to announce that a new mark was achieved on Blue Gene/L, currently ranked as the world's fastest supercomputer.

This world record for a scientific application was set by achieving a sustained performance of 207.3 trillion floating-point operations per second (teraFLOPS) on the "Qbox" computer code for conducting materials science simulations critical to national security.

BlueGene/L (BGL) is an IBM supercomputer housed in the Lab's Terascale Simulation Facility and is used to conduct materials science simulations for NNSA's Advanced Simulation and Computing (ASC) program, which unites the scientific computing know-how of Los Alamos, Sandia and Lawrence Livermore national laboratories.

"This is an important step on the path to performing predictive simulations of nuclear weapons, and these simulations are vital to ensuring the safety and reliability of our nuclear weapons stockpile. These results further confirm that BlueGene/L's architecture can scale with real-world applications. The performance of the Qbox code was made possible by the partnership with our IBM collaborators, who helped to optimize the code's performance on BG/L's 131,072 processors," said Dimitri Kusnezov, head of NNSA's ASC Program.

Qbox is a first-principles molecular dynamics (FPMD) code, designed to predict the properties of metals under extreme conditions of temperature and

pressure — a long-standing goal for researchers in materials science and high energy-density physics. FPMD codes are used for complex simulations at the atomic level in a number of scientific areas, including metallurgy, solid-state physics, chemistry, biology and nanotechnology.

The "Q" in Qbox is for "quantum," a reference to the quantum mechanical descriptions of electrons that are the principal focus of this type of simulation code. The ability to accurately model changes to the electronic structure of atoms distinguishes FPMD codes from classical molecular dynamics codes.

The three-dimensional code run, studying how molybdenum (a transition metal) atoms behave under pressure, represents one of only a handful of "predictive science" simulations achieving this size: 1,000 molybdenum atoms. While classical molecular dynamics calculations are frequently



Doug East and Barbara Atkinson of Computation in the Terascale Simulation Facility room housing BlueGene/L, the world's fastest computer.

run with billions of atoms because the interactions between the atoms are relatively easily computed, routine quantum runs, which are both very complex and accurate, have been restricted to around 50 atoms until now. The difference between 50 and a 1,000 makes the difference between being able to explore new classes of chemical systems using first-principles methods,

logical systems behave over time, where it was previously only possible to get brief snapshots at a smaller scale. This capability to do predictive science is important to NNSA's national security mission, as its researchers try to understand how the materials in nuclear weapons age, particularly for those warheads that have aged beyond their intended life.

including heterogeneous environments (considering interactions between unlike molecules) and extreme chemistry (including shocks). Such a step is important to NNSA's Stockpile Stewardship Program, and also has important implications for biological systems, including the study of proteins as well as for the broader research community (enabling the development of new materials of interest to industry, for example).

Predictive simulations allow researchers to understand how complex physical, chemical and bio-



Computerworld honors Lab's ASC program

NNSA's Advanced Simulation and Computing program at the Laboratory was honored and named a Computerworld Honors Program laureate for its role in the development of the world's fastest supercomputer, BlueGene/L.

The ASC program was a finalist in the Science category of the Computerworld Honors awards, which recognize "contributions organizations and people have made for the betterment of society through the exceptional – if not heroic – use of information technology." ASC was nominated for the award by IBM.

Dona Crawford, associate director for Computation, accepted a laureate medal and plaque on behalf of the ASC program in a recent gala ceremony in Washington DC's Andrew Mellon auditorium. Dimitri Kusnezov, director of NNSA's ASC Program, also attended the ceremony.

IN PROFILE

Susana Reyes believes the time has come to go nuclear

By Linda Lucchetti
Newsline staff writer

In an era of global warming, Susana Reyes thinks it's time to go nuclear. On or off the job, Reyes, a Lab nuclear engineer, promotes the application of nuclear science and technology and encourages young students to seek careers in nuclear science related fields.

"Soaring oil prices, pollution issues and short supplies all point to why we need alternative methods of energy. The time for nuclear energy has arrived," Reyes says, "but, we need to educate the public and reassure them of the safety aspect."

A native of Spain and a seven-year Lab employee, Reyes received her Ph.D. in industrial engineering from the University of Madrid. She came to LLNL to complete her doctoral research and then accepted a full time position working in the Physics and Advanced Technologies (PAT) Directorate's Fusion Energy Program.

Reyes' main interest lies in fusion energy. She is currently involved in the International Tokamak Experimental Reactor project, a joint international research and development project that aims to demonstrate the scientific and technical feasibility of magnetic fusion power. The fusion community is working together to show that fusion could be used to generate electrical power, and to gain the necessary data to design and operate the first electricity-producing plant.

Partners in the ITER project are the European Union (represented by EFDA), Japan, People's Republic of China, India, Republic of Korea, Russian Federation and United States. ITER will soon start to be built in Europe at the CEA site in Cadarache, France. Reyes is excited to be a part of the international project. In collaboration with UCLA, and other domestic institutions, she is working on research and development activities to design fusion blanket modules to be tested in ITER.



Outside of her daily work activities, Reyes serves as the current chair of the Northern California Section (NCS) of the American Nuclear Society (ANS), a nonprofit international, scientific and educational organization committed to supporting nuclear science and technology.

The section, now with more than 150 members, was established in 1954 by a group of individuals who recognized the need to unify and promote the professional activities within the diverse fields of nuclear science and technology in the San Francisco Bay Area. Over the past several years, the group has been instrumental in providing education and outreach so the public can make informed decisions about nuclear energy.

"I want to make a difference," Reyes said. "My goal is to promote the ANS and encourage Lab scientists to join and participate. We have a lot to contribute."

Brian Wirth, a professor at UC Berkeley and formerly of LLNL, urged Reyes to get involved in local chapter activities. "I am glad I did," she said. "The affiliation has been very rewarding for me on

“*Soaring oil prices, pollution issues and short supplies all point to why we need alternative methods of energy. The time for nuclear energy has arrived. . . we need to educate the public and reassure them of the safety aspect.*

– Susana Reyes

several levels.

"I've met many colleagues in my field and networked with professionals outside of the Laboratory. I've introduced Lab speakers to ANS monthly meetings that are held around the Bay Area. This visibility promotes the Lab's research among private companies and institutions."

Recent speakers include Bill Halsey and Jor-Shan Choi from LLNL, Steven R. Specker, president and CEO of EPRI, former president of GE Nuclear Energy, Mike McMurphy, vice president of Cogema group of Companies, Ed Sayre, ACRE group, distinguished faculty such as Ehud Greenspan, Per Peterson, James S. Tulenko and Congresswoman Ellen Tauscher.

Reyes has recently been elected vice-chair of the Fusion Energy Division within the American Nuclear Society, and next year, she will take the reins and serve as the division's chairperson.

Another area that Reyes endorses is the society's educational outreach program, a topic she is passionate about. The program supports K-12 curriculum via science teacher workshops at institutions

including UC's Edward Teller Education Center (ETEC) located adjacent to the LLNL site at the East Gate; scholarships for high school students entering science and engineering; and, "Expanding Your Horizons in Math and Science," an annual local conference that aims to spark young women's interests in science and math careers.

She also is active with the Berkeley Edge Program that encourages underrepresented minority students who are eligible for Ph.D. programs to apply to UC Berkeley.

Reyes lives in San Francisco. When she is not riding in her vanpool, or at work or involved in ANS activities, you can find her enjoying the city, exercising, doing yoga or occasionally volunteering with "Project Sunshine," a nonprofit organization founded by some of her San Francisco colleagues that assists terminally ill and disabled children in the Bay Area.

To become a member or for more information about the local chapter of the ANS, contact Reyes at reyes20@llnl.gov or go to the Web at <http://www.nuc.berkeley.edu/ans/norcal/index.html>.

MIT's Drew Endy to discuss engineered biological systems in DDLS

Drew Endy, assistant professor of Biological Engineering at the Massachusetts Institute of Technology, will deliver a Director's Distinguished Lecturer Series presentation, "Foundations for Engineering Biology," at 3:30 p.m. Monday, June 26, in the Bldg. 123 auditorium.

Engineered biological systems have been used to process information, construct materials, manufacture chemicals,

produce energy, provide food and help enhance human health and the environment.

Unfortunately, scientists' ability to quickly and reliably engineer biological systems that behave as expected remains quite limited. Foundational technologies are needed to help with the engineering of biology. In this talk, Endy will discuss how advances in foundational technologies are impacting the science and engi-

neering of biology and, in turn, broader human interests.

Endy earned degrees in civil, environmental, and biochemical engineering at Lehigh and Dartmouth universities, followed by postdoctoral work in genetics and microbiology at the University of Texas, Austin and University of Wisconsin-Madison. He first came to the MIT as a fellow in 2002.

After joining the MIT faculty in

2004, Endy co-founded the Synthetic Biology Working Group and the Registry of Standard Biological Parts. In 2005, Endy co-founded the BioBricks Foundation, which is working to develop legal and economic strategies to support open biotechnology.

The presentation will be rebroadcast on Lab TV, channel 2 at 10 a.m., noon, 2, 4 and 8 p.m. Thursday, July 6, and 4 a.m. Friday, July 7.

SCIENCE NEWS

Pilot program to screen aircraft cargo for explosives

By Stephen Wampler
Newsline staff writer

A pilot program to screen passenger aircraft cargo for explosives will be launched later this summer at San Francisco International Airport (SFO) by the U.S. Department of Homeland Security (DHS).

Known as the Air Cargo Explosives Detection Pilot Program, the effort will be conducted at SFO air cargo facilities under a collaboration with LLNL, the DHS's Science and Technology (S&T) Directorate and the Transportation Security Administration (TSA).

The \$30 million cargo explosives screening pilot program will later be expanded to two other — as yet unannounced — U.S. airports.

Announcement of the program came Monday during a press conference at the airport that featured San Francisco Mayor Gavin Newsom; John Martin, the director of SFO; John Kubricky, director of the Office of Systems Engineering and Development for DHS; LLNL researcher Howard Hall, program leader for Countermeasures Test Beds; and Earl Morris, general manager of Security Operations for the Transportation Security Administration. Reporters from nearly 20 newspapers, radio stations and television stations attended the event.

"The objective of the program is to understand better the technological and operational issues associated with explosives detection for air cargo," said LLNL's Hall.

"This work will provide critical knowledge to help make future decisions on the national air cargo security infrastructure, as well as assist in the research and development planning to support air cargo security," Hall added.

Other agencies involved in the SFO pilot program are the airport, air carriers, Oak Ridge



PHOTOS BY JACQUELINE MCBRIDE/NEWSLINE

Center: The announcement of a program to screen passenger aircraft cargo for explosives came Monday during a press conference at the San Francisco International Airport. **Left:** Reporters from numerous TV, newspaper and radio outlets attended the press conference and screening demonstration. **Right:** Taking part in the announcements were, from left, San Francisco Mayor Gavin Newsom; the Lab's Howard Hall, program leader for Countermeasures Test Beds; Don Prosnitz, deputy associate director for programs in the Nonproliferation, Homeland and International Security Directorate; and Lab Executive Officer Ron Cochran.

National Laboratory, Pacific Northwest National Laboratory and the New Jersey-based Transportation Security Laboratory.

With the amount of air cargo undergoing screening due to rise substantially, scientists will seek a better understanding of the economic impact of these changes on the air carriers and how they do business, Hall said.

The pilot program will focus on developing concepts of operation for screening air cargo. Those concepts will be evaluated and checked to see whether they can be improved for use at other airports.

Work done in conjunction with the Transportation Security Laboratory will, in part, focus on developing a list of appropriate screening techniques for different commodities and types of air cargo.

The program will use currently available commercial technology for screening air cargo. It is expected new ideas will be generated for where the department should invest its R&D resources to improve the technology.

To advance the field, the DHS is already funding the development of new screening technologies for explosives, such as advanced X-ray systems that can screen entire pallets at once.

Among the systems or techniques now used for baggage screening that will also be deployed at SFO for cargo screening are Explosive Detection Systems, Explosive Trace Detectors, and standard X-ray machines, as well as canine teams and manual inspections.

Data collected through this program will allow the research team to check the accuracy of computer models that will simulate the air cargo screening process at SFO, and can then be expanded to the entire airport and other airports.

The S&T Countermeasures Test Beds program provides DHS with an independent and objective testing capability. This program provides information about scientific, economic and operational issues associated with deploying technologies. Additionally, the program provides data to decision-makers as to which technologies are suitable for different missions.

ON THE COVER:

Dave Weirup, a group leader in the Lab's Defense Sciences Engineering Division, examines the cargo screening area at SFO.



JACQUELINE MCBRIDE, NEWSLINE

SCIENCE NEWS

Lab team completes study of nitrates in water

By Lynda Seaver

Newsline staff writer

Using a method of combining chemical and isotopic tracers, a team of scientists from the Laboratory has completed a study that helps pinpoint the sources of nitrate in the Tri-Valley's groundwater supply.

The study took place on a portion of the Valley's groundwater basin, which is managed by the Zone 7 Water Agency.

The study, which is reported in the June 21 edition of *Applied Geochemistry*, is part of the Groundwater Ambient Monitoring and Assessment (GAMA) project, a partnership between LLNL, the U.S. Geological Survey, and the State of California to study groundwater contamination throughout the state.

According to the California Department of Health Services, nitrate is the most common contaminant found in state groundwater and presents a serious threat to the state's supply. In many groundwater basins, increasing urbanization has created a growing demand for drinking water, while long histories of agricultural activity have left aquifers potentially at risk from nitrate contamination.

The study determined that contamination due to animal waste (including seepage from septic systems) has decreased over the past two decades, and that synthetic fertilizer is increasing as a source of nitrate contamination in the Valley's groundwater. The study also concluded that naturally occurring nitrogen in soil is the most likely source of high background levels of nitrate in basin groundwater. Nitrate contamination can come from application of synthetic fertilizer, confined animal operations, septic system discharge, or oxidation of soil nitrogen.

"As more and more rural areas in California are developed into cities, sources of viable drinking water become a cause for concern. These studies provide valuable information for water managers to determine what can be used as a water source," said Jean Moran, a chemist and project leader for LLNL's involvement in GAMA. Moran and Brad Esser, the scientific capability leader for environmental radiochemistry, led the study.

"It wasn't so long ago that the Livermore-Amador Valley was an agricultural hub," explained Matt Katen, who leads Zone 7's groundwater protection program. "As the region continues to evolve into an increasingly urban

area, we need to stay one step ahead in understanding potential sources of groundwater contamination. This study will help us do that."

To determine contamination sources, Moran, Esser and colleagues combined nitrate isotope data with other isotopic tracers such as tritium and the isotopic composition of water to provide insight into the routes and timing of nitrate in the groundwater. Stable isotopes provide information about water sources, while tritium-age dating defines groundwater residence times and transport behavior. In addition, dissolved gas and nitrate isotope evidence indicates that nitrate moves conservatively in the basin's groundwater, which simplifies source attribution. Based on these data, the team could determine whether the nitrate came from a waste water source (such as manure or septic system discharge) or a synthetic source (such as inorganic fertilizer).

The study makes no recommendations, yet its findings will be used as the state and other water agencies determine future courses of action. The same group of LLNL scientists will carry out a detailed study of discharge from septic systems in Livermore this summer, in cooperation with Zone 7 and the State of California.

"These methods can be widely

applied to other regions with historical nitrate inputs and can provide valuable information in evaluating future migration strategies," Moran said.

As the Valley's water supply wholesaler, one of Zone 7's primary missions is to manage the groundwater basin to maintain its viability as a source of drinking water and to protect it from any potential damage. The valley's groundwater basin plays a critical role in Zone 7's water supply responsibilities, supplying up to 25 percent of the Valley's annual water needs. With a capacity of 250,000 acre feet, the agency also uses the groundwater basin to store water in the event of a prolonged drought. Zone 7 recharges the groundwater basin naturally with rainfall and artificially with surface water imported from the Bay/Delta.

Zone 7 supplies treated water to more than 190,000 people via four water retailers: the cities of Pleasanton and Livermore; the Dublin-San Ramon Services District; and the California Water Service Company, and supplies untreated water to agricultural customers. All of Zone 7's water, no matter the source, meets the state and federal limits for a safe drinking water supply.

ES&H Fair takes the heat

Hundreds of employees weathered triple-digit temperatures on Thursday to attend the annual ES&H Fair outside Bldg. 663.

With over 60 booths, employees could easily access information about their environment, safety and health. The event was sponsored by the LLNL Grassroots Safety Collaboration.

Clockwise, from top right:

Mohammad Dehghani explains a hand gauge to Ronnie Balan; (left) Cheryl Stockton receives Body Mass Index (BMI) results from Dr. Christina Danskin of Omega Chiropractic; Dana Flamburis of Hazards Control uses a human skeleton to educate employees; The TID "Free Lunch Band" entertains and energizes the crowd; Alameda County Search and Rescue's canine "Bear" takes a break from demonstrating rescue techniques.

PHOTOS BY
JACQUELINE MCBRIDE/NEWSLINE



LABORATORY NEWS

Laboratory's value management effort sets new standard

By Linda Lucchetti
Newsline staff writer

You're getting ready to remodel your kitchen. You want to know if the contractor you hired is on schedule and on budget, since you've got a limited amount of money in savings and a dinner party for the boss scheduled that you have to be ready for. What do you do?

Sounds like you could use the Earned Value Management System — a project management technique for evaluating how well a project is being executed with respect to technical requirements, cost and schedule.

In May, the Lab received good news about its Earned Value Management System (EVMS). A letter from DOE's Office of Management stated: "LLNL has successfully demonstrated compliance of its Earned Value Management System with the American National Standards Institute/Electronic Industries Alliance Standard 748-A."

For John Post of the National Ignition Facility (NIF) Programs Directorate, who served as the institutional project manager for the certification project, the letter brings with it more than good news — it means that the Laboratory has achieved a signifi-

cant milestone.

"EVMS is a valuable methodology to manage and report on a project," Post explains. "The process and associated tools help to answer key questions like 'Did we do what we said we would do? Did we do it when we said we would do it? Did we do it at the cost we said it would done?'"

LLNL's push to attain the EVMS certification started two years ago with Glenn Mara, then deputy director for Operations, who saw EVMS as an important tool for the future, as well as a potential contract requirement. The certification process itself took many months with assistance from numerous employees. "There are many, many people responsible for this accomplishment," Post emphasized.

The EVMS describes how the Laboratory is compliant with the 32 guidelines in the ANSI standard which were implemented through a set of institutional procedures used at the two LLNL projects presently required to use a certified implementation — the National Ignition Facility Project

and the Engineering Technology Complex Upgrade (ETCU) project.

For the past 10 years, federal agencies have joined industry in viewing EVMS as an effective management practice. Post

believes the Lab's EVMS certification comes at an opportune time with respect to our upcoming contract transition period. EVMS provides many benefits. It gives everyone involved with the project — sponsors, DOE and all front line people — the same level of visibility as well as accountability.

"They know what's expected and how the project is progressing. LLNL has successfully managed projects for years, but hasn't experienced the level of formality and visibility that an EVMS yields. Implementation of a certified system provides a commonly spoken language with which to communicate," Post added.

Anita Zenger, Plant Engineering project manager, worked on the certification team and agrees that EVMS is beneficial. "The system helps bring

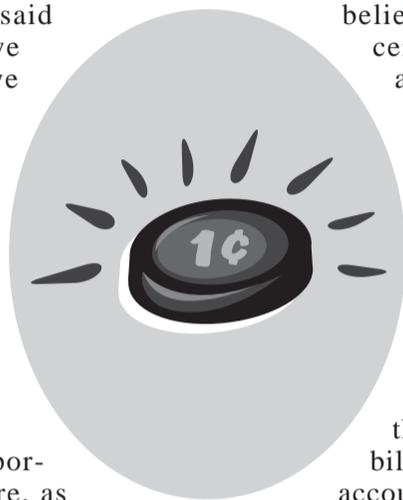
some formality to project management at the Lab — it crosses directorates," she said, "and, because the system is recognized by outside corporations, the Lab is likewise highly recognized."

On a personal note, Zenger said her involvement on the team has brought her attention from Lab groups now seeking her expertise and participation on projects.

Post sees another advantage to the Lab's certification process — working collaboratively with staff from other national laboratories, as well as the UC Laboratory Management Office.

"I've greatly appreciated the opportunity to work so closely with people from national labs and UC," he said. "The process has opened up avenues of collaboration for myself and other Livermore team members who visited Los Alamos, Lawrence Berkeley, and Sandia national laboratories, in particular. The University of California is now the first DOE contractor to certify all of its sites, and is the only contractor that has a site-wide certification for each site.

"Achieving the EVMS certification and having it under our belts is where our sponsor expects us to be right now. This lays the foundation for the 'heavy lifting' work that comes later."



'Paws for a cause' community project launches 2006 HOME campaign

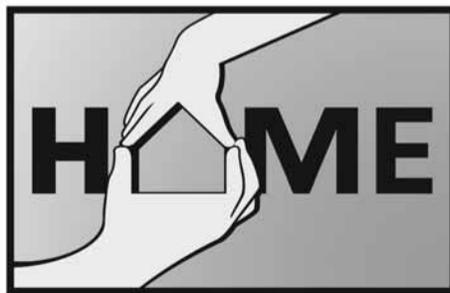
'Paws for a Cause' is the theme of the first 2006 HOME Campaign "At HOME in Our Community" project set for July to help the East Bay Society for the Prevention of Cruelty to Animals (SPCA).

During July, Lab employees can volunteer to help dogs and cats in need at the SPCA's Tri-Valley animal shelter in Dublin. Volunteers can take part in the following fun, furry projects: fostering a litter of kittens at home; working as handypersons for a day at the shelter; assembling 'kongs'— plastic toys used to feed dogs; and making fleece cat beds and toys.

The East Bay SPCA is the

largest and oldest humane organization in the East Bay, serving Alameda and Contra Costa counties since 1874 with a mission to end the euthanasia of adoptable dogs and cats in our community through adoption programs, foster care programs and by providing affordable spay and neuter services. The SPCA also provides

HELPING OTHERS MORE EFFECTIVELY



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pet owners with resources via information hotlines, regular dog training and puppy socialization classes.

Look for details about July's "at HOME"

project to help the East Bay SPCA and how to sign up in Monday's edition of *NewsOnline*.

The "at HOME" projects are

coordinated by the Lab's 2006 HOME Campaign sponsored by the Administration and Human Resources and Biosciences directorates. The projects allow many Lab employees not only to learn more about the agencies to be represented in the HOME campaign, but to get involved in a variety of projects.

There will be an "At HOME in Our Community" project each month leading up to the annual Run for HOME on Wednesday, Oct. 25, sponsored by the NIF Directorate. For more information, contact "At HOME in Our Community" co-chair Germaine Clark, 2-1135.

Council leader talks energy with Lab



PHOTO BY JACQUELINE McBRIDE/NEWSLINE

From left: Steve Grey, David Lester and Ron Cochran.

The Council of Energy Resource Tribes (CERT) Executive Director David Lester recently met with Laboratory officials to discuss formalizing LLNL's advisory relationship with the tribes.

Lester said that having the Laboratory serve as a technical advisor to CERT and its member tribes will move many projects closer to fruition. He will ask members of his board of directors, tribal leaders, to visit Livermore in the near future to see first hand the Lab's science and engineering capabilities.

CERT represents fifty four major energy tribes — tribes that have a unique relationship with the federal government because of the treaties signed when Indians gave up their land, Lester explained. As sovereign governments, the tribes play a major role in the nation's energy development; tribes own almost fifteen percent of the natural resources in the United States. Over the years CERT has played a major role in energy policy development for tribes

Lester thanked both Lab Director George Miller and Executive Officer Ron Cochran for their support. CERT annually hosts one of the largest private fundraising events to raise money for students pursuing science and engineering. Key energy companies participate in the event, which receives strong support from the Laboratory. Lester said it is important to support the Indian science and engineering students who will be the tribal leaders of the future.

Cochran responded that the Laboratory as an institution is especially interested in continuing to support CERT because of its strong focus on Indian education. Steve Grey, manager for the Lab's American Indian Program, added that Indian science and engineering students receive financial support from organizations like CERT.

Lester noted that CERT worked closely with the Senate Indian Affairs Committee and the Department of Energy to shape the language of recent energy legislation, which now provides many opportunities for tribes.

PEOPLE NEWS

IN MEMORIAM

Jack P. Lima

Jack Lima, a longtime Tracy resident, died June 2 at Sutter Tracy Community Hospital. He was 81.

Lima worked as a tool repairman at the Lab until his retirement after 26 years.

He kept busy with his property, and enjoyed spending time with his wife, children, grandchildren, friends and cats.

He is survived by his wife of 54 years, Helen of Tracy; children, Fred Lima, and his wife, Loretta, of Patterson, Jack Lima, and his wife, Shellie of Stockton, Sharon Himmel, and her husband, Steve, of Kuna,

Idaho, Terri Wichman, and her husband, Ron, of Turlock; siblings, Carmen Dutro of Woodlake, Frank Lima of Stockton and Joe Lima of Laverne; 12 grandchildren; and three great-grandchildren.

He was preceded in death by his parents, Joe and Guihermina Lima; brother, Tony Lima; and sister, Mary Leonardo.

Services were held in Tracy. Contributions in his name may be sent to the St. Bernard's Catholic Church Building Fund, 163 W. Eaton Ave., Tracy 95376.

Jean B. Tilghman

Jean Tilghman, a former Lab employee, died March 20. She was 69.

Tilghman was born March 5, 1937, in Baltimore, Md. At an early age, she moved with her family to Brooklyn, N.Y. She worked as a clerk typist for the Brooklyn Naval Shipyard.

In 1971, she moved to California. She worked at General Electric in Oakland, and later worked at the Lab starting in 1976 in the Procurement Department, retiring in 1993 as a computer operator for Administrative Information Systems.

She enjoyed traveling, helping friends and strangers in need, birthday celebrations, Christmas parties and decorations.

She leaves two sons, Michael C. May of Washington D.C., and Mitchell W. May of Tracy; a brother, Milton Tilghman of Alameda, a daughter-in-law, Dana May of Sacramento; a sister-in-law Beverly Tilghman of Richmond; several grandchildren, nephews, cousins, friends, and an extended family of sons and daughters.

Hot topics in science



PHOTO BY JACQUELINE McBRIDE/NEWSLINE

From left: Evi Dube, division leader, CAR, Computation served as moderator for panel members Elbert Branscomb, associate director, Biosciences; Anantha Krishnan, director, Micro/Nano Technology Center, Engineering; Mark Musculus, Combustion Research Facility, Sandia National Labs; and Edward Moses, associate director, NIF. Panelists talked about the science opportunities or "hot topics" in their fields of expertise. The discussion was held Thursday as part of the Institutional Education Committee's activities for summer students.

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Preventive burns prepare Site 300 for dry season

While researchers and technicians may burn the midnight oil at Site 300, it's Lab firefighters who burn the native grasses and brush, with a visible smoke plume.

Every year since the Site's inception, as soon as the vegetation dries and the weather conditions are right, five or six days of controlled burns remove unwanted vegetation from 1,500 acres of the 7,000-acre site that borders Corral Hollow Road. As is the case this year, the burn occurs near the cusp of spring and summer.

Not all of the native grasses and brush on site are burned. The selected areas include a perimeter strip and a margin around the outdoor firing tables, especially 851. As burn time approaches, outdoor shots are restricted, with Fire Department approval mandatory — and sometimes a fire crew standing by during the shot.

According to Lab Fire Chief Randy Bradley, who's spent his share of time working the annual burn, at least 10 Lab firefighters monitor the fire lines and apply a petroleum-based accelerant as needed, to help the fire spread.

Bradley explained that the Lab offers training classes in conducting controlled burns to other departments. This year three firefighters from other agencies provided assistance as the hands-on part of their earlier classroom training. "This is akin to painting Tom Sawyer's fence," Bradley acknowledged.

There are several goals of the annual burn. But, the two principal reasons are to prevent on-site fires from escaping onto neighboring lands. And the

reciprocal reason is to keep off-site wildlands fires from intruding onto the site and endangering personnel and facilities. Additionally, controlled burns help sustain native vegetation.

Firefighters work closely with air district meteorologists to learn when wind and humidity conditions are just right. Winds that are too high, or humidity that's too low, could spread the fire too quickly. Conversely, "...low winds or high humidity produce more of a smudge-pot effect, with the fire spreading too slowly and creating lots of smoke in the process," Bradley said.

Bradley stressed the detailed planning and safety elements of the annual burn. "As soon as things dry out, Plant Engineering cuts more than 80 miles of fire trails that we use to set and control the fires. These trails are part of the safety infrastructure for the burn," Bradley said.

He added that burns are coordinated with the Lab's Environmental Protection Department and permitted through both the Bay Area Regional Air Quality Management District and the San Joaquin Valley Air Pollution Control District.

According to the chief, "This year's extended rainy season and high rainfall have produced record level vegetation on the burn sites, so we'll be especially cautious."

With all that fuel loading, the fire should burn hotter, which means cleaner — but potentially faster. So we'll keep a careful eye on it, to make sure nothing compromises our safety record."



UC Regents visit the Laboratory



NIF Associate Director Ed Moses, far left, shows NIF optics to UC Regents during their visit June 15.

PHOTO BY JACQUELINE MCBRIDE/NEWSLINE

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